

AMENDMENTS TO THE CLAIMS

Claims 1-33. (Canceled)

34. (Currently Amended) A substrate processing apparatus for cleaning a substrate, comprising:

a substrate holder for holding a substrate having a copper film thereon;

a processing head having anodes and cathodes, arranged alternately along at least one direction, so as to face the substrate when held by said substrate holder, said anodes and cathodes being away from the substrate when held by said substrate holder;

a processing liquid supply section for supplying a processing liquid containing an electrolyte between the substrate, when held by said substrate holder, and said anodes and cathodes; and

a power source for applying a voltage between said anodes and cathodes so as to generate micro-bubbles in the processing liquid when between the substrate and said anodes and cathodes; and

an ultrasonic transducer for emitting ultrasonic waves to the processing liquid, when between the substrate and said anodes and cathodes, so as to collapse the micro-bubbles, said ultrasonic transducer being on said processing head so as to face the substrate when held by said substrate holder, and said ultrasonic transducer and said anode and cathodes being arranged next to each other.

35. (Previously Presented) The substrate processing apparatus according to claim 34, wherein

said power source is for applying a voltage between said anodes and cathodes, so as to generate micro-bubbles in the processing liquid when between the substrate and said anodes and cathodes, by applying a pulse voltage between said anodes and cathodes.

Claims 36 and 37. (Canceled)

38. (Currently Amended) The substrate processing apparatus according to claim-~~37~~
34, further comprising:

another ultrasonic transducer for emitting ultrasonic waves to the processing liquid, when between the substrate and said anodes and cathodes, so as to collapse the micro-bubbles, said another ultrasonic transducer being on said processing head so as to face the substrate when held by said substrate holder, and said ultrasonic transducer and said another ultrasonic transducer being generally triangular in shape and arranged symmetrically about a center of said processing head.

39. (Currently Amended) The substrate processing apparatus according to claim-~~36~~
34, wherein

said processing liquid supply section comprises supply ports and suction ports, with each of said supply ports being in a corresponding one of said cathodes, and with each of said suction ports being in a corresponding one of said anodes.

40. (Currently Amended) The substrate processing apparatus according to claim-~~36~~
34, wherein

a distance between the substrate, when held by said substrate holder, and said anodes differs from a distance between the substrate, when held by said substrate holder, and said cathodes.

41. (Currently Amended) The substrate processing apparatus according to claim-~~36~~
35, wherein

at least one of said substrate holder and said processing head is operable to provide relative movement between the substrate, when held by said substrate holder, and said processing head during application of the pulse voltage between said anodes and cathodes.

Claims 42-53. (Canceled)